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ABSTRACT

In reviewing the Army Continuing Education System in 1979, the Assistant Secretary of the Army found a basic skills program based on traditional academic level goals was inadequate to meet the Army's requirement to provide functional, job-related basic skill education. Combining the shrinking manpower pool and projected basic skill deficiencies of the future soldiers with the increased complexity and sophistication of the equipment systems of the future, there is a substantial discrepancy between the required capabilities of the operators and maintainers of equipment systems and the capabilities of entering soldiers. Consequently, the Army has elected to invest approximately 37 million dollars over a four-year period into a substantial research effort which will deal with the identification and curriculum development of basic skills instructional materials, English-as-a-Second Language Program, life coping skill curricula materials, and learning strategies curriculum. This multi-faceted approach is an attempt to remediate a variety of basic skills deficiencies which are prevalent in the soldiers entering the Army at this time. The results of this effort will substantially affect the readiness of the Army and basic skill programs in public education in America in the period three to five years from now. (Author/RL)

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A MULTI-FACETED APPROACH FOR THE DEVELOPMENT OF THE ARMY'S FUNCTIONAL BASIC SKILLS EDUCATION PROGRAM (BSEP)

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"The decade ahead will most likely be one of challenge, change, crisis, confrontation and conflict," so cautioned Chief of Staff Gen Edward C Meyer in a recent statement of the posture of the Army, given to the Senate Armed Services Committee. Each of these themes of challenge, change, crisis, confrontation, and conflict are underpinned by the need for competence (collectively as an Army and individually as soldiers), and it is this need for competence that inspired the Army to develop a Functional Basic Skills Education Program (BSEP).

Historically the American Army has been confronted with soldiers who were deficient in a variety of Basic Skills (Literacy, Mathematics, Language, etc). This dilemma has been aptly summarized by the TRADOC Historical Office in a paper discussing aspects of illiteracy covering the history of America.

> During the Civil War, both the United States and Confederate Armies had a significant literacy problem. In fourteen companies of thirteen North Carolina regiments, the number of illiterates averaged 40 out of 100. While this illiteracy rate was undoubtedly higher than in most Confederate organizations, the great majority of companies throughout the Army had anywhere from one to a score of members who could not write their names. Those who were barely literate were much more numerous than those of fair education. The Union soldier on the average was more literate than his Confederate counterpart as a result of a better elementary education system. While there were more foreign born soldiers in the Union Army, many of the immigrants were literate, but not necessarily in English.
>
> Among the illiterates were many Blacks recently freed from slavery and some underprivileged whites from large cities. The average company in the Union Army had from one to half-dozen illiterates, but many had none. Schools were organized in many black regiments, and in some white ones, to teach the rudiments of reading and writing on a voluntary basis. There was no central education program.
>
> While illiteracy was not as great a handicap to Civil War soldiers as it is today, it still constituted a disadvantage and sometimes produced embarrassing and dangerous situations. One Union soldier was assigned to guard a bridge leading to Washington. When he protested the order on the grounds of inability to read passes, he was told by his sergeant, "Never mind, you have only to look at them." Rather than trying to conceal his ignorance, the soldier left his post and got drunk, ending up being sentenced to two years at hard labor by a court martial. One Ohio soldier wrote home:
>
> > i can see the good of what i have got now. there is lots of men here that cant wright and they have got to git somebody to wright there letters i wouldent take five hundered dolers for what learn i have got.
>
> Approximately 25 percent of the men enrolled under the Selective Service System during World War I were illiterate. Training of these men began in development battalions attached to each of the depot brigades which had been established to furnish replacements. The training of illiterates continued after the war in Army schools with the hope that it would not only improve the recruits, but in so doing it would stimulate sentiment in favor of better educational opportunities for society as a whole.

Prior to 1940, the Census Bureau determined literacy by asking the individual or an acquaintance whether the individual could read or write. In 1940, the bureau switched to defining literacy in terms of the years of school completed. A study showed that of those who had completed four years of school, only one in twenty was illiterate. Anyone with more than four years schooling was listed as literate, and those who had completed less than five years were considered functionally illiterate.

Army and mobilization regulations provided for the establishment of special training schools or units for men of poor educational background. On 28 July 1941, the War Department directed that special training units be organized at each replacement training center. From 1 August 1942 to 31 May 1943, 107,075 illiterates were inducted. No figures are available for the functional illiterates who entered the Army between May 1941 and July 1942. The number of local schools for illiterates or low-literates increased rapidly in 1942 and was over 384 by May 1943 (Weinert, 1979).

In the late 1960's the Department of Defense elected to enlist under its Project 100,000 men who had previously failed a selective service mental examination. This plan included all aspects of lowering standards for admission into service, research into the characteristics and behaviour patterns of these men, training employment, and substantial follow-on studies (1).

The most current status of basic skill deficiencies in the services is weekly described in government reports, special TV broadcasts, or newspaper headlines that repeatedly point out that over 50% of the 1st term enlistees of the Army are from the lowest Mental Category (IV). Early on indications of this condition and field commanders' comments concerning the soldiers out in the Army persuaded the Department of the Army to review its entrance standards, examinations, and approaches being used to remediate these basic skill deficiencies.

The prospect of having thousands of illiterate soldiers in a World War II era Army is not comparable to the implications of thousands of "functionally illiterate" soldiers in today's highly technical and sophisticated Army. Today's Army is a weapons-intensive army that has substantial operation and maintenance requirements of complex equipment. The soldier must be both trainable and capable of performing. (2).

The General Accounting Office (GAO) in 1977 in an oft quoted report suggested that:

Military services' data indicate some enlisted personnel have reading abilities below the written material they are expected to use during their careers. This problem is not new to the services, and a continued flow of recruits with low reading ability is predicted. When compared to the normal recruit population, poor readers tend to

- have higher discharge rates,
- experience more difficulty in training,
- perform less satisfactorily on the job, and
- lack the potential for career advancement.

The Secretary of Defense needs to develop a policy to effectively address the illiteracy problem.

Congress in response to this report directed that all education programs conducted during the normal working day (0800-1700) be directly related to the soldier's Military Occupational Specialty (MOS) requirements, and that high school completion programs for those who were successfully passing their occupational skill requirements be conducted during off duty hours.

The Army's response to this Congressional mandate was the development of a pilot Basic Skills Education Program. The pilot BSEP effort was to be composed of a Pre-AIT and Post-AIT training. The Pre-AIT phase was purportedly designed to provide all enlistees with the Basic Educational Skills (Reading, Mathematics, and English Communication) needed to complete AIT and to be awarded an MOS. The Post-AIT phase was purportedly designed to provide all AIT graduates with the Basic Educational Skills required for Post-AIT training and/or for professional development. Both phases were to operate during the normal duty day and to be coordinated/integrated into the master training schedule. This initial approach replaced the on-duty high school preparation program and the AIT Preparatory Training (AITPT) program. The Pre-AIT Phase (BSEP I) was developed as a tool for commanders, within the Army Initial Entry Training base, to improve the educational foundations of trainees with literacy deficiencies or difficulty communicating in English. This remedial education was initiated to reduce attrition rates and improve the potential for understanding later training. The SelectABLE (a 15-minute multiple choice test used in conjunction with the Adult Basic Learning Examination (ABLE) developed by the Psychological Corporation) and the English Comprehension Level Test (ECLT) (developed by the Defense Language Institute English Language Center) were selected as the instruments to be used for identifying those individuals experiencing academic or communication difficulties.

The actual criteria used for admission into BSEP I was a score of less than 19 on the SelectABLE test, roughly reflecting a grade level of approximately the 5th grade and/or a score of less than 70 on the English Comprehensive Level Test (ECLT), reflecting a probable difficulty in communicating in English. From the early data analysis compiled by TRADOC of the individuals identified by either the SelectABLE or the ECLT, certain trends emerged:

Of the 209,483 enlistees tested on SelectABLE:

4.3% (8,993) scored below 19 (less than 5 GL)

14.3% (29,976) scored between 19 and 26 inclusive (5 GL-7 GL)

39.9% (83,676) scored between 27 and 35 inclusive (7 GL-9 GL)

41.5% (86,838) scored above 35 (greater than 9 GL)

Of the 6,478 enlistees tested using ECLT:

56.3% (3,648) scored below 70

Of those who scored below 19 on SelectABLE (4,142):

37.8% (1,570) were high school graduates (diploma and GED)

44.9% (1,858) were Regular Army Enlistees

7.3% (305) were USAR enlistees

47.8% (1,979) were ARMG enlistees

44.4% (1,836) were white

54.1% (2,242) were black

1.5% (64) were other

Of those 1,093 who scored below 70 on ECLF:

73.3% (801) were high school graduates (diploma and GED)

65.0% (710) were Regular Army enlistees

5.7% (62) were USAR enlistees

29.3% (321) were ARMG enlistees

80.0% (874) were insular Puerto Rican

15.3% (167) were other Spanish

4.7% (52) were other

From initial evaluations of this pilot BSEP effort it was found that there was a wide disparity in the degree to which locally developed programs bore a relationship to job performance. In many cases, instruction was oriented towards improving specific intelligence score(s) or general academic performance with little or no direct relationship to increased military proficiency.

By June, 1978 there was substantial command interest concerning the efficiency and effectiveness of this BSEP effort. In a staff paper prepared for the Assistant Secretary of the Army, Manpower and Reserve Affairs by Dr Richard Kern of the Army Research Institute, he concluded:

"Track Record" of the general remedial education approach. Typical achievement gains for personnel at the BSEP I and II levels are so small it is unlikely that there will be any improvement in the soldiers' ability to apply the general skills taught under this approach in learning and performing a specific job. Because it is a general approach, there is no systematic effort to focus on the specific types of reading, arithmetic and communication skills soldiers will need to apply in performing their jobs. Research conducted on the job reading component of the Army's Advanced Individual Training-Preparatory Training (AITPT) program demonstrated that given training on specific types of job reading requirements, low achievers show greater general reading skills. Data on approximately 3000 students distributed over the six training centers showed an average gain of approximately two RGL on job-related reading versus an average gain of approximately one RGL on general reading.

Lack of appropriate criteria for defining program content and for evaluating effectiveness of program in improving soldiers' MOS-related skills. Criteria proposed are grade level achievement scores obtained from tests used to assess achievement in relation to instructional programs presented in our Nation's primary and secondary schools. These criteria do not identify the types and levels of reading, arithmetic and communication skills required for effective learning and performance of jobs in specific MOS. Lacking MOS-related criteria curriculum developers can not design instruction to improve MOS-related skills; they can only design instruction to improve the skills required by the civilian school system for general educational development. Lacking MOS-related criteria, effectiveness of the BSEP can only be evaluated against its success in achieving the instructional objectives of the Nation's primary and secondary schools. Public school criteria do not tell us how adequate the soldier's reading, arithmetic and communication skills are in relation to the MOS job requirements.

Duty Time Cost. If implemented as a program to improve soldiers' MOS-related skills, field commanders stand to lose a far greater proportion of their troops' duty time to attendance at an academic skills program than has currently been the case. It should be noted that there is considerable concern in the field about meeting Skill Qualification Test (SQT) requirements. Under the present BSEP proposal, all personnel reading below the 9th RGL would be eligible for enrollment in BSEP II. Personnel whose reading skill level is between the 9th and 12th RGL would be eligible for BSEP III. Given these standards and the requirement that the individual qualify on the SQT it is difficult to see how a commander could deny an eligible soldier enrollment in BSEP (Kern, 1978).

This type of counsel suggested to the Assistant Secretary of the Army for Manpower and Reserve Affairs that perhaps the pilot BSEP effort should be examined in more detail. The Training and Doctrine Command in its own evaluation of BSEP I had concluded that:

Less than 100 of BSEP I eligibles are from mental categories I and II of the AFQT;

SelectABLE is a reasonably valid predictor of difficulty with reading/math during initial entry training;

The SelectABLE score of 19 did not identify all those who may have a need for BSEP I instruction; the majority of TRADOC installation commanders expressed concern that the SelectABLE score of less than 19 was too low to identify many soldiers who need BSEP I instruction in order to successfully complete initial entry training; and for BSEP I, to be fully effective, must be more specifically related to the MOS in which the enlistee is to be trained.

Based upon these findings TRADOC recommended:

That BSEP I be continued as a field test through 30 September 1980 to provide the opportunity to expand the statistical bases for full evaluation.

The SelectABLE test should continue to be used to identify BSEP I eligibles until Army MOS-specific diagnostic tests are developed and validated.

That BSEP I-Literacy tracking be expanded to include all individuals who score less than 36 on SelectABLE (approximately 9 GT).

That BSEP I-Literacy be made more MOS-specific.

That in view of varying MOS requirements and subject to commander decision, BSEP I-Literacy eligibility may be extended to include those who score more than 18 on the SelectABLE (TRADOC, 1980).

In his review of the Army Continuing Education System (ACES) in the Spring of 1979, the Assistant Secretary of the Army found that the existing BSEP program, which was based on the traditional academic grade level goals, was inadequate to meet the Army's requirement to provide functional job-related basic skills education and that the Army had the obligation to develop a "functional" approach to basic skills remediation that would reflect the state-of-the-art application of "systems theory" and "learning theory". The review resulted in a series of recommendations (15) that were designed to broaden and improve the soldiers' opportunities to improve their educational status. The Secretary of the Army and The Chief of Staff of the Army issued a joint memorandum that stipulated the Army's goals. This memo stated:

An important Army responsibility is the development and conservation of the human resources it recruits. Therefore, the Army will fulfill its obligation to provide on-duty, job-related education programs. The Army and the nation will benefit from these efforts through a better trained and educated soldier and citizen. This education effort will permit us to ensure that soldiers are fully productive in the increasingly complex Army of the future.

The Army's policy is to provide on-duty, job-related basic skills development for the soldier which will improve:

> Likelihood of performing satisfactorily both in training and on the job.
>
> Capability of functioning effectively in the Army community and outside the immediate work setting.
>
> Potential for completing high-quality, off-duty high school, college, vocational-technical, apprenticeship or other education programs.
>
> Potential for pursuing the wide variety of education programs covered by Veterans Educational Assistance Program (VEAP) or other veterans benefits (Meyer and Alexander, 1979).

The Training and Doctrine Command (TRADOC) in its command responsibility for all on-duty training took this direction and responded with a four pronged approach to develop and implement the proposed Functional Basic Skills Education Program.

1. MOS Baseline Skills.
2. English as a Second Language (ESL) Skills.
3. Army Life Coping Skills.
4. Learning Strategy Skills.

The MOS Baseline Skills area was defined as those specific basic skill competencies in reading, writing and computation required to absorb training and perform effectively in the soldier's assigned MOS, which are normally assumed to be present prior to training. The functional approach to BSEP recognized that the presence or absence of these skills in any given individual could not be determined on the basis of standardized reading test scores and that programs designed to raise standard test scores lacked sufficient focus to bring individuals to the desired level of competence in the time available. Consequently, TRADOC proposed to develop tests and instructional materials to address specific MOS-related skills requirements based on detailed analyses of the learning requirements of each MOS.

The English-as-a-Second Language component was aimed at developing the English language proficiency of non-native language speakers to the level required to function effectively as a soldier in the US Army. Language deficits and cultural shock have had a significant negative impact on trainability in initial entry training and upon job performance. Functional ESL incorporated the specific language required in military training and prepared for the cultural transition to an English-speaking military environment.

Army Life-Coping Skills are those competencies which enable the soldier to successfully deal with the day-to-day demands associated with Army life. The military already addressed many life-coping problems in separate programs (such as check-cashing and drug or alcohol abuse) but had never considered life-coping skills as a total educational requirement.

The Learning Strategy Skills component recognized that for a substantial majority of the soldiers in the Army, there were few techniques for learning that were known or practiced by the soldier. Learning strategy skills assist the soldier in meeting career learning requirements by improving his ability to acquire, process, store, and retrieve information. Learning strategies emphasize development of efficient and independant learners. Learning strategy skills directly impact upon soldier trainability and become more important in the Army environment which includes a requirement to employ a large number of new and complex equipment systems.

Through this four component approach TRADOC was attempting to deal with a fairly complex problem on a broad basis. The remainder of this paper will now describe the development of the MOS Baseline Skills component, leaving a discussion of the other 3 programs to another panel member (LTC Pilgrim).

As has been described earlier on in this paper, the American Army has dealt with its literacy problems, in a variety of ways. The problem of the 1980's took on a grander scale because of the personnel situation and the equipment found in a modern Army. Available manpower projections for the 1980's and mid 1990's had pointed out that the Army would be drawing from a shrinking manpower pool. Through examination of test scores of individuals taken from this pool, there was a noticeable decline of the basic skill competencies of these future soldiers. Combining these two factors with the increased complexity and sophistication of the equipment/weapon systems of the future (3), it became obvious that there potentially could be a substantial discrepancy between the required skills for the operation and maintenenace of our equipment systems and the actual skills of soldiers entering the Army.

TRADOC by attempting to build a Functional Basic Skills program was hearing the recommendations of the Secretary of the Army and a variety of educational researchers, who had suggested that the solution for basic skills remediation for the Army, is not to be found in the "little red school house" approach to teaching soldiers "how to read to the nth Grade level." From the research of people like Sticht, Lawson, Kern, etc it was felt that the solution to the individual soldier's personal need was tied to <u>his military speciality</u> and <u>its</u> training and performance requirements.

Any training or instructional program that has been systematically developed should automatically take account of the entering level of its students. If a course receives a group of students that are "brighter" than the usual lot, the teacher should accommodate this higher entry level by starting the course at a more advanced level, thereby accommodating the student's real ability level. Similarly, if a group of students are not as bright or quick or gifted as the usual lot, then the teacher should slow down the course and perhaps even start with the BASICS.

This approach of starting with the Basics was precisely the goal of Functional BSEP. The significant difference of this and previous efforts was that the <u>Basics</u> would be tied directly to the soldier's job. To accomplish this definition or specification of the Basics for a given soldier's specialty meant that the soldier's specialty had to be operationally described in terms of the tasks performed and skills required. The Army has attempted over the past six years to do just that, in terms of its Soldier Manuals. Utilizing a variety of analytic techniques, the various service schools have tried to quantify what it is that each soldier is expected to be able to do, and to know. They have done this with varying degrees of success. Most

analyses were of marginal quality, and few if any produced a sufficiently detailed analysis upon which to develop a Functional Basic Skills Program. In spite of the lack of good analysis, the service schools produced Soldier Manuals, Exportable Teaching Packages, and conducted resident school instruction. For these training materials and programs, the training developers established projected entry levels for soldiers training in that specialty. This baseline of assumed skills or prerequisites became the start point of training for that specialty. All training within that specialty would therefore (theoretically) start at that level and build toward the group of soldier tasks which collectively qualify a soldier in a given specialty. For a variety of reasons the assumed entry level or start point for training remained fixed while more and more soldiers deficient in a variety of basic skills enlisted into the Army. It is important to note that not all basic skill deficiencies have a direct or immediate impact upon a given soldier's trainability or performance in his specialty. Through a Functional Basic Skills Program, the Army desired to remediate, through on-duty training those prerequisites that the soldier was deficient in and which were related to his job.

Because of the scope, complexity, difficulty, and manpower requirements for accomplishing this substantial analysis and training development effort, the Army chose to contract out the program rather than doing it "in house" at its respective service schools.

Considering the inadequacy of most analysis materials that were available, it was proposed that the specification of the prerequisite competencies begin with a detailed breakout/analysis of the soldier's job as stated in the Soldier Manual tasks (Skill Level 10 and 20) starting with the terminal behaviour and working down to the prerequisites (Figure 1). The subordinate relationship of these prerequisite skills to the tasks and sub-tasks would be graphically and numerically established.

Through analysis, the training developer would be able to accurately specify the requisite skills that are related to a given set of soldier tasks or performances. Because there are aspects of training that require skills not normally associated with job performance, a second part of the prerequisite competencies analysis dealt with the identification and analysis of the skills required to complete Initial Entry Training.

Once all of this analysis has been conducted and a set of prerequisite competencies have been identified for each specialty, the training developer would then group or cluster the specialties according to similarities of prerequisite skills and other appropriate factors. This grouping of specialties is designed to ultimately facilitate a parsimonious procurement of packaged Basic Skill Materials that can be utilized most efficiently and effectively by a given soldier for a given specialty.

One of the most important parts of a Functional Basic Skills Program is the selection/diagnostic instrument used to identify and place a soldier into the Basic Skills materials/program that his job requires. As previously discussed, the various basic skill tests available, to include the SelectABLE, lacked this most important ability of job relatedness. For this reason, the development of functional diagnostic tests was considered critical. Once the prerequisite competencies for a given specialty have been identified through analysis, the training developer must then develop a test that is capable of accurately identifying the specific competencies that a soldier is deficient in, in terms of his specialty. Two levels of tests were proposed: one to be given at the beginning of Initial Entry Training to assess those prerequisite competencies required to complete IET; and the second test, which is given at the end of IET to assess those prerequisite competencies required later in the soldier's job and for which he is at that time deficient (Figure 2). The design of these tests must accommodate the limited time available for testing, while accomplishing a prescriptive placement of a soldier through a multi-level diagnostic

branching test (Figure 3) that is developed directly for a given specialty. Through a functional job related basic skills testing program a soldier should be placed into a "remedial" training program that is designed to compensate for HIS job related basic skill deficiencies, thereby insuring accurate placement and measured skill progression.

The final phase of developing a Functional Basic Skills Program involves the actual training development of an instructional system that will work. It is projected that through a modular approach the various levels and topics required for a Functional BSEP could be produced. Acknowledging the potential similarity of prerequisite competencies across Career Management Fields(CMF), it is important to attempt to parsimoniously build a system that capitalizes upon this similarity and produce an optimal configuration of modules balancing cost, efficiency, and effectiveness. The preliminary contractual efforts would then suggest the design guidelines, parameters, and possible specifications for the subsequent procurement of BSEP modules.

The Functional BSEP effort described in this paper is an attempt by the Army to deal with a personnel problem that is reflective of societal needs. The Army as a microcosm of society, aptly reflects an obvious Basic Skill deterioration over recent years. The multi-faceted approach of the Army is an attempt to deal with the breadth and depth of the real basic skills problems confronting society. The Army has opted for a long term, systematically developed Functional Basic Skills Program that potentially will solve the projected skill discrepancy of Tomorrow.

(1) For a detailed discussion of Project 100,000 refer to: Fisher, 1971, and McFann, 1969.

(2) For a detailed discussion of the Evaluation of the Basic Skills Education Program, Phase I, BSEP I, refer to TRADOC report of said Title, dated 11 June 1980 (AD-A086798).

(3) For a detailed discussion of the Implication of Highly Sophisticated Weapon Systems on Military Capabilities, refer to the Controller General's Report to the Congress, June 1980 (AD-A086453).

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